

Application No.: 09/870226

Case No.: 54538US012

REMARKS

Claims 1-21 and 35-37 are pending. Claims 22-34 have been canceled. Claims 1, 15 and 35 have been amended. No claims have been added.

Support for the amendments to claims 1, 15 and 35 may be found, for example in the specification at page 6, lines 27-30 with respect to the structured surface comprising the structured surface, and at page 7, lines 3-5 with respect to the opposed surface comprising the back surface.

The Invention

The present invention comprises a retroreflective article that has a structured front surface and an opposed back surface. The structured front surface comprises cube corner cavities. The walls of the cavities have a reflective film disposed on them. A transparent adhesive fills the cavities.

The structured front surface gives the article of the present invention its retroreflectivity. The front surface is, therefore, the surface upon which light impinges and is retroreflected. Because light impinges upon this surface, it is essential that the adhesive be transparent.

The Rejections

Claims 1-14 have been rejected under 35 USC § 103(a) as being unpatentable over Rowland (US 3,810,804) or Rowland (US 5,376,431) (collectively Rowland I) in view of Rowland (US 5,512,219) (Rowland II). Claims 15-21 and 35-37 have been rejected under 35 USC § 103(a) as being unpatentable over Chau (US 5,735,988) in view of Rowland II.

The Rejection of Claims 1-14

The Examiner argues that claims 1-14 are unpatentable because Rowland I teaches a retroreflective article that comprises a cube corner prism coated with a reflective layer that has an adhesive over it. He further argues that Rowland II teaches that cube corner prisms can be formed as a positive or a negative array. He concludes that it would be obvious to one having

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ordinary skill in the art to form a retroreflective negative structure motivated by the fact that the secondary reference discloses that either type of structure is known in the art.

Rowland I discloses a retroreflective element comprised of cube corner projections that may be coated with a reflective layer and that may have an adhesive applied over the reflective layer. The adhesive is used to attach the resulting article to a substrate. Rowland I still further teaches that the front face of the body layer is a planar face, that light passes through the body of the article and enters the retroreflective formations that comprise the back surface of the article. The light then impinges on the reflective layer and is retroreflected therefrom. See column 2, lines 30-38 of the '431 Rowland and column 2, lines 51-68 of the '804 Rowland. In other words, Rowland I teaches the front surface of the body is planar and that light impinging on the front surface passes through the body and never passes through the adhesive layer.

Rowland II discloses the use of a mold useful in the manufacture of microstructure sheets. It also discloses the manufacture of microstructure sheets. The mold may comprise either positive or negative prism arrays.

The combination of Rowland I with Rowland II fails to support the rejection under 35 USC § 103(a). There is no motivation to combine these references. Rowland I is directed to a retroreflective article per se. Rowland II is directed to a mold used to make a retroreflective element. There is no suggestion in Rowland I that there would be any benefit in using the mold used to make the article as a retroreflective article. Likewise, there is no suggestion in Rowland II that there would be anything to be gained by using a mold as the retroreflective article. Consequently, there is nothing to suggest their combination.

The combination of Rowland I with Rowland II fails to support the rejection under 35 USC § 103(a) for yet another reason. Even if the combination were made, the resulting article would be nothing more than Rowland I with cube corner cavities on the back surface of the body. To achieve the present invention, one would have to make yet another modification to the combination so as to provide a body having a front structured surface. Nothing in either reference suggests this change.

It is also noted that since Rowland I teaches that incident light passes through the front non-structured surface of the body before it reaches the structured surface, Rowland I does not

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recognize that there would be any benefit achieved by not having the incident light pass through the body, but rather having it pass through the transparent adhesive and the impinge on the structured front surface of the body. Rowland II fails to provide any of the missing motivation. It only teaches the use of a mold to make a retroreflective sheet. It does not suggest that the sheet should have the structure required by the present claims.

As a result, the combination of Rowland I with Rowland II fails to support the rejection of claims 1-14.

It is noted that the Examiner has not provided any specific support for the rejection of claims 2-13. Applicants submit that these claims are each patentable over the combination of references relied upon for additional reasons. Specifically, the Applicant submits that each of these claims adds on or more limitations that are neither disclosed in, nor suggested by, either of the references.

The Rejection of Claims 15-21 and 35-37

The Examiner argues that these claims are upatentable because Chau teaches one to coat reflective prisms with a metallized layer and then provide a UV curable coating over the prisms. The Examiner further urges that Chau teaches that any type of surface topography can be used in place of prisms. He concludes that it would be obvious to combine Chau with Rowland II because Rowland II teaches that the array of prisms can be formed as either a positive or a negative array.

The Chau reference is directed to an optical element used to provide collimated back lighting to a liquid crystal display. Chau uses continuous linear peaks to reflect the maximum amount of light possible to the display. Chau desires to provide essentially total reflectance of incident light to the display. Chau only teaches the use of an optically transparent material and is silent with regard to the use of an adhesive.

Chau does not teach retroreflective articles. To the contrary, Chau et al. only teaches specularly reflective articles that provide collimated light. As understood by one skilled in the art, the linear structure of Chau et al. would not have the characteristic that obliquely incident incoming light would be reflected in a direction antiparallel to the incident light, or nearly so, so

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that an observer at or near the source of the light could detect the reflected light. In other words, the structure of Chau would not be retroreflective.

Although Chau et al. says that any type of surface topography can be used to make his reflective article, the reference provides no suggestion as to what type of surface topography is meant. This teaching is only a general statement and does nothing to suggest that a retroreflective surface should be used. In fact, it is submitted that the use of a retroreflective surface would not produce collimated light to the display as required by Chau. This is because the retroreflective surface is a discontinuous surface. These discontinuities introduce interference patterns into the reflected light that would reduce the collimation of light returned to the display. This is contrary to the goal of Chau. Consequently, the combination suggested by the Examiner would not be appropriate.

It is noted that the Examiner has not provided any specific support for the rejection of claims 16-21 or 36-37. Applicants submit that these claims are each patentable over the combination of references relied upon for additional reasons. Specifically, the Applicant submits that each of these claims add limitations that are neither disclosed in, nor suggested by, either of the references.

In view of the above, it is submitted that the application is in condition for allowance. Reconsideration of the application is requested.

Allowance of all pending claims at an early date is solicited.

Respectfully submitted,

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Date

By: James V. Lilly
James V. Lilly, Reg. No.: 7,817
Telephone No.: (651) 733-1543

Office of Intellectual Property Counsel
3M Innovative Properties Company
Facsimile No.: 651-736-3833